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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Response to Arguments

1. Applicant's arguments filed 12/11/2008 have been fully considered but they are not persuasive.

The applicants argue that Engeler and Seki, individually or in combination, fail to teach or suggest at least the features of claims such as: adds iodine or iodide to an etching solution to prevent formation of an unsaturated oxide film or a stain film; increases a ratio of nitric acid, which is an oxidizing agent, to increase an oxidizing rate at defect sites to enhance selectivity of etching; and decreases an etching rate of the etching solution, prevents forming an unsaturated oxide film or stains (a stain film) on the surface of the silicon wafer in etching, selectivity of etching is high. This argument is unpersuasive because it is not in commensurate with the scope of claim 5 since none of the above-mentioned claimed features are recited in claim 5

The applicants argue that Engeler discloses a volume ratio of hydrofluoric acid :nitric acid : acetic acid : water of 1 : 5.6 : 3.2 : 0, which differs from the volume ratio of 1 : 13-17 : 4-8 : 4-8 of hydrofluoric acid :nitric acid :acetic acid :water, as recited in claim 5. However, as discussed in the final office action, since Seki serves as an evidence that changing the concentration of the elements of the etching solution/parameters according to the material being etched appears to reflect a result- effective variable. One skilled in the art at the time the invention was made would have found it obvious to vary the concentration of the acids, iodine in Engeler etching solution by conducting routine experimentation in order to achieve any desirable etching rates including the

claimed rates because it is noted that result-effective variable can be optimized MPEP 2144.05

Additionally, it is argue that Engeler does not disclose an etching solution that includes iodine or iodide at a ratio of 1 g per 1 liter of total liquid volume of the etching solution and the claimed etching rate of 100 nm or less. However, claim 5 recites that the etching solution satisfies at least one of:(i)..... and/or (ii),and the etching solution...wafer". The combination of Engeler and Seki meets the requirement of claim 5 because it meets the (i) requirement of the claimed etching solution

The applicants argue that Engeler does not teach or suggest that an etching solution can or should be modified in order to evaluate crystal defects of a silicon wafer by observing etch pits formed on the etched surface of the wafer. It is noted that the term " for evaluating crystal defects of a silicon wafer" is a preamble language and "a preamble generally is not limiting when the claim body describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention." In Poly-America LP v. GSE Lining Tech. Inc., 383 F.3d 1303, 1310, 72 USPQ2d 1685, 1689 (Fed. Cir. 2004)"

It is argue that there is no suggestion to combine the references of Engeler and Seki because : Seki discloses that acetic acid acts to damage the photoresist such that dissolved portions of the photoresist are produced and Seki discloses that the use of acetic acid changes the photoresist into a porous film, Seki discloses that the iodine is added to attempt to increase an etching rate while the solution as recited in claim 5 is used to decrease the etch rate of the etching solution . Theses arguments are

unpersuasive because: Seki is relied only for the teaching of changing the concentration of the elements of the etching solution/parameters according to the material being etched appears to reflect a result- effective variable and the claimed components of the etching solution have been provided in Engeler, the language of "to decrease the etch rate of the etching solution" is not in commensurate with the scope of claim 5

For the above reasoning, the rejection of claims 5 and 9 under 35 U.S.C. §103(a) over U.S. Patent No. 3,558,375 to Engeler ("Engeler") in view of U.S. Patent No. 5,409,569 to Seki) are maintained

The applicants argue that it would not have been obvious to one of ordinary skill in the art to have combined the etching solutions disclosed in the Tiemann and Seki references because Seki discloses that acetic acid should not be used in the etching solution disclosed therein and Tiemann discloses that acetic acid should be used in the etching solution disclosed therein. This argument is unpersuasive because Seki is relied only for the teaching of changing the concentration of the elements of the etching solution/parameters according to the material being etched appears to reflect a result-effective variable and the claimed components, including acetic acid, of the etching solution have been provided in Tiemann. The applicants further argue that neither Tiemann nor Seki provide any reason or rationale for one of ordinary skill in the art to have modified the etching solutions disclosed therein to be within the claimed ranges. This argument is unpersuasive because since Seki serves as an evidence that changing the concentration of the elements of the etching solution/parameters according to the material being etched appears to reflect a result- effective variable.

One skilled in the art at the time the invention was made would have found it obvious to vary the concentration of the acids, iodine in Tiemann etching solution by conducting routine experimentation in order to achieve any desirable etching rates including the claimed rates because it is noted that result-effective variable can be optimized MPEP 2144.05. Thus, the rejection of claims 5 and 9 under 35 U.S.C. §103(a) over U.S. Patent No. 3,772,102 to Tiemann in view of U.S. Patent No. 5,409,569 to Seki) are maintained

It is argued that there is no suggestion to combine the references of Gantley and Seki because: Seki discloses that acetic acid acts to damage the photoresist such that acetic acid should not be used in the etching solution, Seki discloses that the iodine is added to attempt to increase an etching rate while the solution as recited in claim 5 is used to decrease the etch rate of the etching solution. These arguments are unpersuasive because: Seki is relied only for the teaching of changing the concentration of the elements of the etching solution/parameters according to the material being etched appears to reflect a result-effective variable and the claimed components of the etching solution have been provided in Engeler, the language of "to decrease the etch rate of the etching solution" is not in commensurate with the scope of claim 5

It is argued that one of ordinary skill in the art would not have modified the etching solutions disclosed in Gantley and Seki to achieve an etching solution capable of evaluating crystal defects of a silicon wafer by observing etch pits formed on the etched surface of the wafer with low electrical resistivity. This argument is unpersuasive because: it is not in commensurate with the scope of claim 5 since the language of "to

achieve an etching solution capable of evaluating crystal defects of a silicon wafer" is not explicitly recited in claim 5, since the combination of Gantley and Seki disclose/suggest etching a surface of the silicon wafer by immersing the wafer in the claimed etching solution comprises acetic acid, iodine, nitric, observing etch pits formed on the etched surface of the wafer, the silicon wafer is in crystalline form, the combination meets the requirement of claim 5

Thus, the rejection of claims 5 and 9 under 35 U.S.C. §103(a) over U.S. Patent No. 3,960,623 to Gantley in view of U.S. Patent No. 5,409,569 to Seki) are maintained

Conclusion

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAN VINH whose telephone number is (571)272-1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lan Vinh/
Primary Examiner, Art Unit 1792

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